



State of Utah

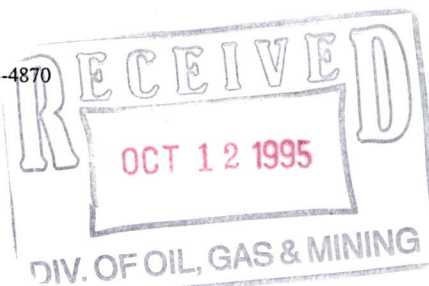
DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER QUALITY

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CERTIFIED/RETURN RECEIPT

October 6, 1995

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Glen Eurick
Barrick Mercur Gold Mine
P.O. Box 838
Tooele, Utah 84074

SUBJECT: Area 3 Conceptual Closure Plan: Permit No. UGW450001

Dear Mr. Eurick:

In accordance with the permit conditions of the ground water quality discharge permit for Valley Fill Leach Area #3, Barrick submitted a Conceptual Closure Plan to our office on January 13, 1995. Our review and response to this item was delayed while we worked with Barrick on the more immediate closure issues for Valley Fill Leach Area #2. The learning curve gained in the process of the successful negotiations that lead us to an acceptable closure agreement for Area #2 should be of some benefit as we begin to examine the closure possibilities for Area #3. To review the conceptual framework under which our Division has approached the closure issues for the three leach facilities at the Barrick Mercur Mine please refer to our letter of February 17, 1993 (attached). In that letter we recognized the differences in the regulatory status of Areas #1, 2 and 3: Area 1 being an existing facility; Area 2 an existing facility being regulated under a 1990 Consent Order; and Area 3 a permitted facility being regulated under the ground water regulations. The regulatory status of Area #3 requires the application of BAT in closure design, which includes cover design, cover placement, neutralization and other aspects of closure design. Some of the following comments are based on this original framework and some are based on what has been learned since then. In accordance with the above referenced permit Part I.H.2 and the following comments the Conceptual Closure Plan should be modified and submitted for Executive Secretary approval within 45 days of your receipt of this letter.

1. Capping/Cover Placement

The final cover proposal consisting of a 12 inch low permeability soil layer, 36 inches of top soil, 12 inches of top soil and established vegetation appears to meet our expectations with respect to BAT design for the facility. Because Area #3 is a much larger facility than Area #2, (i.e. greater potential to discharge) the addition of a low permeability layer to the cap design is appropriate.



2. Post Closure Fate of Leachate Fluids

Area #3 does not have a functioning leakage collection system that can return fluids that pass through the primary liner to a collection point for appropriate management. Additionally, because of the lack of a functioning leakage collection system, it is unclear whether or not the upper liner leaks at all. While the monthly water balance report for Area #3 to date has not indicated significant leakage from the facility, the accuracy of the methodology in water balance reporting is such that significant leakage to the aquifer could be occurring and still go undetected. Therefore, the fate of leachate fluids following closure is unclear. Will these fluids be allowed to pond on the primary liner, potentially creating a bathtub effect and possible future surface water discharge or, will Barrick continue to manage these fluids into the post closure period? The revised Conceptual Closure Plan must specifically address the post closure fate of leachate fluids.

The production cistern may have to be maintained for an additional period during the "drain down period." This is not recognized in the present closure plan. This period could be significantly shortened if the level of the fluids on the liner during rinsing is minimized. Removal of the production cistern must be tied into the final disposition of leachate fluids as described above. Barrick's plans concerning the length of time the production cistern will remain operational and a overall examination of the fate of the leachate fluids during the Post Closure period must be included in an revised Conceptual Closure Plan.

3. Neutralization - BAT Requirements

Permitted facilities under the ground water regulations are required to utilize BAT to minimize the discharge of any pollutants. Determination of BAT is to some extent site specific and we must attempt to balance what is technically achievable in terms of reductions of pollutant concentrations versus potential environmental impacts, economic considerations and costs such as utilization of natural resources. The Conceptual Closure Plan states that rinsing with fresh water should be avoided if possible because of the problems associated with the tailings impoundment water balance. It also questions whether or not fresh water should be wasted on neutralization activities. We believe that these concerns are not of sufficient merit to eliminate fresh water rinsing as an option. Maximum reduction of pollutants must be the overriding goal of the neutralization effort. The submitted Conceptual Closure Plan does not propose any sort of frame work for determination of BAT with respect to Neutralization. The revised Conceptual Closure Plan must remedy this deficiency. Barrick must propose specific measures such as column neutralization studies or pilot testing to determine a sequence of neutralization activities that will result in the maximum overall reduction of potential contaminants that can be economically achieved. The revised Conceptual Closure Plan should also consider the following comments.

- 1) The previous neutralization efforts at Area #1 and Area #2 were typified by the utilization of a significant volume of water for recirculation. Operating heads on the liners were often in the range of 20-30 feet. Instead of having 20-30 feet of excess water on the pond liner during neutralization, keeping this volume to a minimum is suggested. The benefits of this suggestion are as follows: a) Fresh water rinsing would become more viable as the

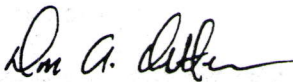
overall quantity of water needed would be significantly smaller. b) Lowering the head on the liner during neutralization would reduce potential discharge to the aquifer. c) Based on previous HELP modeling for Area #2, drain down time following neutralization could be shortened by 1-3 years.

- 2) A calculation of the pore volume within the subore should be made and compared to potential pumping rates to determine the length of time necessary to pass a sufficient amount of rinsate through the rock. This would provide an indication as to whether or not the tentative time frame for completion of neutralization activities is realistic and would also indicate the number of potential rinsing steps that might be completed in the allotted time frame.
- 3) During the modeling effort for Area #2, average contaminant concentrations from the leakage collection system (LC-2) during the previous year were used as predicted long term discharge characteristics. Because the primary liner in Area #2 has significant tears in it, fluids from LC-2 were representative of the rinsate fluids during the neutralization period. During this period, reclaim water was used as makeup water and rinsate fluids were recirculated through the subore. The reclaim water itself has high pollutant concentrations, compared to meteoric water, and presumably some net concentration of pollutants in the rinsate resulted from the recirculation of this water through the subore. The result was that pollutant concentrations that could be expected from long-term infiltration of meteoric water were probably vastly overestimated. In addition to determining the best rinsate sequence, column neutralization studies or pilot studies would provide a more realistic prediction of the characteristics of the long term discharge.

Please call Dennis Frederick of this office at (801) 538-6038 if you have questions concerning the above.

Sincerely,

Utah Water Quality Board



Don A. Ostler, P.E.
Executive Secretary

Enclosure

DAO:DAF:df/mhf

cc: Brian Slade, Tooele County Health Dept.
Division of Oil, Gas & Mining